What is claimed is:

1. A ≥ 4 kHz repetition rate argon fluoride excimer laser system for producing an UV wavelength 193nm output, said laser system comprising:

an argon fluoride excimer laser chamber, said excimer laser chamber for producing a 193nm discharge at a pulse repetition rate ≥ 4 kHz, said excimer laser chamber including at least one magnesium fluoride crystal optic window for outputting said 193nm discharge as a ≥ 4 kHz repetition rate excimer laser 193nm output, said magnesium fluoride crystal optic window having a 255nm induced absorption less than 0.08 Abs/42mm when exposed to 5 million pulses of 193nm light at a fluence ≥ 40mj/cm^2/pulse and a 42mm crystal 120nm transmission of at least 30%.

2. A laser system as claimed in claim 1 wherein said 42mm crystal 120nm transmission is at least 35% .

3. A laser system as claimed in claim 1 wherein said 42mm crystal 120nm transmission is at least 40% .

4. A laser system as claimed in claim 1 wherein said magnesium fluoride crystal optic window has a Fe contamination level less than .15ppm Fe by weight.

5. A laser system as claimed in claim 1 wherein said magnesium fluoride crystal optic window has a chrome contamination level less than .06ppm chrome by weight.

6. A laser system as claimed in claim 1 wherein said magnesium fluoride crystal optic window has a copper contamination level less than .02ppm copper by weight.

7. A laser system as claimed in claim 1 wherein said magnesium fluoride crystal optic window has a cobalt contamination level less than .02ppm cobalt by weight.

8. A laser system as claimed in claim 1 wherein said magnesium fluoride crystal optic window has an Al contamination level less than .7ppm Al by weight.

9. A laser system as claimed in claim 1 wherein said magnesium fluoride crystal optic window has a nickel contamination level less than .02ppm nickel by weight.

10. A laser system as claimed in claim 1 wherein said magnesium fluoride crystal optic window has a vanadium contamination level less than .02ppm vanadium by weight.

11. A laser system as claimed in claim 1 wherein said magnesium fluoride crystal optic window has a lead contamination level less than .02ppm lead by weight.

12. A laser system as claimed in claim 1 wherein said laser system includes a magnesium fluoride crystal optic prism, said magnesium fluoride crystal optic prism external from said excimer laser chamber wherein said ≥ 4 kHz repetition rate excimer laser 193nm output is transmitted through said magnesium fluoride crystal optic prism with said magnesium fluoride crystal optic prism having a 255nm induced absorption less than 0.08 Abs/42mm when exposed to 5 million pulses of 193nm light at a fluence ≥ 40mj/cm^2/pulse and a 42mm crystal 120nm transmission of at least 30%.

13. A laser system as claimed in claim 1 wherein said magnesium fluoride crystal optic window has an 200 to 210 nm range absorption coefficient < 0.0017 cm^{-1}.

14. A laser system as claimed in claim 12 wherein said magnesium fluoride crystal optic prism has an 200 to 210 nm range absorption coefficient < 0.0017 cm^{-1}

15. A ≥ 4 kHz repetition rate fluoride excimer laser system for producing an UV wavelength λ<200nm output, said laser system comprising:

an excimer laser chamber, said excimer laser chamber for producing an UV wavelength λ<200nm discharge at a pulse repetition rate $\geq$ 4 kHz, said excimer laser chamber including at least one magnesium fluoride crystal optic window for outputting said λ<200nm discharge as a $\geq$ 4 kHz repetition rate excimer laser λ<200nm output, said magnesium fluoride crystal optic window having a 255nm induced absorption less than 00.08 Abs/42mm when exposed to 5 million pulses of 193nm light at a fluence $\geq$ 40mj/cm^2/pulse and a 42mm crystal 120nm transmission of at least 30% and a 200 to 210 nm range absorption coefficient < 0.0017 cm^{-1}.

16. A laser system as claimed in claim 15 wherein λ is centered about 193nm.

17. A laser system as claimed in claim 15 wherein said 42mm crystal 120nm transmission is at least 35%.

18. A laser system as claimed in claim 15 wherein said 42mm crystal 120nm transmission is at least 40% .

19. A laser system as claimed in claim 15 wherein said magnesium fluoride crystal optic window has a Fe contamination level less than .15ppm Fe by weight.

20. A laser system as claimed in claim 15 wherein said magnesium fluoride crystal optic window has a chrome contamination level less than .06ppm chrome by weight.

21. A laser system as claimed in claim 15 wherein said magnesium fluoride crystal optic window has a copper contamination level less than .02ppm copper by weight.

22. A laser system as claimed in claim 15 wherein said magnesium fluoride crystal optic window has a cobalt contamination level less than .02ppm cobalt by weight.

23. A laser system as claimed in claim 15 wherein said magnesium fluoride crystal optic window has an Al contamination level less than .7ppm Al by weight.

24. A laser system as claimed in claim 15 wherein said magnesium fluoride crystal optic window has a nickel contamination level less than .02ppm nickel by weight.

25. A laser system as claimed in claim 15 wherein said magnesium fluoride crystal optic window has a vanadium contamination level less than .02ppm vanadium by weight.

26. A laser system as claimed in claim 15 wherein said magnesium fluoride crystal optic window has a lead contamination level less than .02ppm lead by weight.

27. A laser system as claimed in claim 15 wherein said laser system includes a magnesium fluoride crystal optic prism, said magnesium fluoride crystal optic prism external from said excimer laser chamber wherein said ≥ 4 kHz repetition rate excimer laser λ<200nm output is transmitted through said magnesium fluoride crystal optic prism with said magnesium fluoride crystal optic prism having a 255nm induced absorption less than 0.08 Abs/42mm when exposed to 5 million pulses of 193nm light at a fluence ≥ 40mj/cm^2/pulse and a 42mm crystal 120nm transmission of at least 30% .

28. A laser system as claimed in claim 15 wherein said magnesium fluoride crystal optic window has a 203 to 207 nm range absorption coefficient < 0.0017 cm^{-1}

29. A laser system as claimed in claim 27 wherein said magnesium fluoride crystal optic prism has an 200 to 210 nm range absorption coefficient < 0.0017 cm^{-1}

30. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic for transmitting a ≥ 4 kHz repetition rate fluoride excimer UV wavelength λ<200nm output, said laser crystal optic comprising a magnesium fluoride crystal with a 255nm induced absorption less than 0.08 Abs/42mm when exposed to 5 million pulses of 193nm light at a fluence ≥ 40mj/cm^2/pulse and a 42mm crystal 120nm transmission of at least 30% .

31. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein λ is centered about 193nm.

32. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein said 42mm crystal 120nm transmission is at least 35%.

33. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein said magnesium fluoride crystal has a Fe contamination level less than .15ppm Fe by weight.

34. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein said magnesium fluoride crystal has a chrome contamination level less than .06ppm chrome by weight.

35. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein said magnesium fluoride crystal has a copper contamination level less than .02ppm copper by weight.

36. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein said magnesium fluoride crystal has a cobalt contamination level less than .02ppm cobalt by weight.

37. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein said magnesium fluoride crystal has an Al contamination level less than .7ppm Al by weight.

38. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein said magnesium fluoride crystal has a nickel contamination level less than .02ppm nickel by weight.

39. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein said magnesium fluoride crystal has a vanadium contamination level less than .02ppm vanadium by weight.

40. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein said magnesium fluoride crystal has a lead contamination level less than .02ppm lead by weight.

41. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein said magnesium fluoride crystal optic has a flat planar face oriented normal to a c axis of said magnesium fluoride crystal.

42. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein said magnesium fluoride crystal optic has a flat planar face oriented nonnormal to a c axis of said magnesium fluoride crystal.

43. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein said magnesium fluoride crystal has a c axis grown magnesium fluoride crystallographic orientation.

44. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic as claimed in 30 wherein said magnesium fluoride crystal has an 200 to 210 nm range absorption coefficient < 0.0017 cm^{-1} .

45. A ≥ 4 kHz repetition rate fluoride excimer laser crystal optic window for transmitting a ≥ 4 kHz repetition rate fluoride excimer UV wavelength λ<200nm output, said laser crystal optic window comprising a magnesium fluoride crystal with a 255nm induced absorption less than 0.08 Abs/42mm when exposed to 5 million pulses of 193nm light at a fluence ≥ 40mj/cm^2/pulse and a 42mm crystal 120nm transmission of at least 30% and a 200 to 210 nm range absorption coefficient < 0.0017 cm^{-1}.

46. A ≥ 4 kHz repetition rate argon fluoride excimer laser crystal optic for transmitting an UV wavelength 193nm argon fluoride excimer laser ≥ 4 kHz repetition rate output, said laser crystal optic comprising a magnesium fluoride crystal with a 255nm induced absorption less than 0.08 Abs/42mm when exposed to 5 million pulses of 193nm light at a fluence ≥ 40mj/cm^2/pulse and a 42mm crystal 120nm transmission of at least 30% .

47. A λ<200nm optical fluoride crystal for transmitting a UV wavelength λ<200nm, said λ<200nm optical fluoride crystal comprising a magnesium fluoride crystal with a 255nm induced absorption less than 0.08 Abs/42mm when exposed to 5 million pulses of 193nm light at a fluence ≥ 40mj/cm^2/pulse and a 42mm crystal 120nm transmission of at least 30% and a Fe contamination level less than 0.17 ppm Fe by weight, a chrome contamination level less than 00.08 ppm chrome by weight, a copper contamination level less than 0.04 ppm copper by weight, a cobalt contamination level less than 0.04 ppm cobalt by weight, an Al contamination level less than 0.9 ppm Al by weight, a nickel contamination level less than 0.04 ppm nickel by weight, a vanadium contamination level less than 0.04 ppm vanadium by weight, and a lead contamination level less than 0.04 ppm lead by weight and a 200 to 210 nm range absorption coefficient < 0.0017 cm^{-1}.

48. A λ<200nm optical fluoride crystal as claimed in claim 47, said magnesium fluoride crystal having a Fe contamination level less than 0.15 ppm Fe by weight, a

chrome contamination level less than 0.06 ppm chrome by weight, a copper contamination level less than 0.02 ppm copper by weight, a cobalt contamination level less than 0.02 ppm cobalt by weight, an Al contamination level less than 0.7 ppm Al by weight, a nickel contamination level less than 0.02 ppm nickel by weight, a vanadium contamination level less than 0.02 ppm vanadium by weight, and a lead contamination level less than 0.02 ppm lead by weight.

49. A ≥ 4 kHz repetition rate argon fluoride excimer laser crystal for transmitting an UV wavelength 193nm argon fluoride excimer laser ≥ 4 kHz repetition rate output, said laser crystal comprising a magnesium fluoride crystal with a 255nm induced absorption less than 0.08 Abs/42mm when exposed to 5 million pulses of 193nm light at a fluence ≥ 40mj/cm^2/pulse and a 42mm crystal 120nm transmission of at least 30% and a Fe contamination level less than 0.17 ppm Fe by weight, a chrome contamination level less than 0.08 ppm chrome by weight, a copper contamination level less than 0.04 ppm copper by weight, a cobalt contamination level less than 0.04 ppm cobalt by weight, an Al contamination level less than 0.9 ppm Al by weight, a nickel contamination level less than 0.04 ppm nickel by weight, a vanadium contamination level less than 0.04 ppm vanadium by weight, and a lead contamination level less than 0.04 ppm lead by weight.

50. A ≥ 4 kHz repetition rate argon fluoride excimer laser crystal as claimed in claim 47, said magnesium fluoride crystal having a Fe contamination level less than 0.15 ppm Fe by weight, a chrome contamination level less than 0.06 ppm chrome by weight, a copper contamination level less than 0.02 ppm copper by weight, a cobalt contamination level less than 0.02 ppm cobalt by weight, an Al contamination level less than 0.7 ppm Al by weight, a nickel contamination level less than 0.02 ppm nickel by weight, a vanadium contamination level less than 0.02 ppm vanadium by weight, and a lead contamination level less than 0.02 ppm lead by weight.